

**ABSTRACT OF THE DISCLOSURE**

This invention is directed to the isolated coding sequences and to the protein sequences they code for. This invention is directed to three coding sequence of the BRCA1 gene. The three coding sequences, BRCA1<sup>(omi1)</sup>, BRCA1<sup>(omi2)</sup>, and BRCA1<sup>(omi3)</sup> and their frequencies of occurrence are provided together with the protein sequences they code for. Another aspect of this invention is a method of determining the consensus sequence for any gene. Another aspect of the invention is a method of identifying an individual having an increased genetic susceptibility to breast or ovarian cancer because they have inherited a causative mutation in their BRCA1 gene. This invention is also related to a method of performing gene therapy with any of the isolated BRCA1 coding sequences. This invention is further related to protein therapy with BRCA1<sup>(omi)</sup> proteins or their functional equivalent.